



Please type a plus sign (+) inside this box

→ +

PTO/SB/21 (08-00)

Approved for use through 10/31/2002. OMB 0651-0031

U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE  
Under the Paper Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

# TRANSMITTAL FORM

(to be used for all correspondence after initial filing)

<b>TRANSMITTAL FORM</b>		<b>Application Number</b>	10/618,024
		<b>Filing Date</b>	July 11, 2003
		<b>First Named Inventor</b>	Robert P. Vaudo, et al.
		<b>Group Art Unit</b>	TBA
		<b>Examiner Name</b>	TBA
Total Number of Pages in This Submission		<b>Attorney Docket Number</b>	ATMI-661

## ENCLOSURES (check all that apply)

<input type="checkbox"/> Fee Transmittal Form	<input type="checkbox"/> Assignment Papers (for an Application)	<input type="checkbox"/> After Allowance Communication to Group
<input type="checkbox"/> Fee Attached	<input type="checkbox"/> Drawing(s)	<input type="checkbox"/> Appeal Communication to Board of Appeals and Interferences
<input type="checkbox"/> Amendment / Reply	<input type="checkbox"/> Licensing-related Papers	<input type="checkbox"/> Appeal Communication to Group (Appeal Notice, Brief, Reply Brief)
<input type="checkbox"/> After Final	<input type="checkbox"/> Petition	<input type="checkbox"/> Proprietary Information
<input type="checkbox"/> Affidavits/declaration(s)	<input type="checkbox"/> Petition to Convert to a Provisional Application	<input type="checkbox"/> Status Letter
<input type="checkbox"/> Extension of Time Request	<input type="checkbox"/> Power of Attorney, Revocation Change of Correspondence Address	<input checked="" type="checkbox"/> Other Enclosure(s) (please identify below):
<input type="checkbox"/> Express Abandonment Request	<input type="checkbox"/> Terminal Disclaimer	Copies of _____ references
<input checked="" type="checkbox"/> Information Disclosure Statement	<input type="checkbox"/> Request for Refund	
<input type="checkbox"/> Certified Copy of Priority Document(s)	<input type="checkbox"/> CD, Number of CD(s)	
<input type="checkbox"/> Response to Missing Parts/ Incomplete Application		Remarks
<input type="checkbox"/> Response to Missing Parts under 37 CFR 1.52 or 1.53		

## SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT

Firm or Individual name	William F. Ryann, Reg. No. 44,313
Signature	
Date	10/15/03

## CERTIFICATE OF MAILING

I hereby certify that this correspondence is being deposited pursuant to 37 C.F.R. 1.8 in an envelope addressed to:  
Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on this date:

10-16-03

Type or printed name	Lee Ann DiLelle	Date	10-16-03
Signature			

Burden Hour Statement: This form is estimated to take 0.2 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.



ATMI-661  
CUSTOMER ID NO.: 25559

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re application of: Robert P. Vaudo, et al.

Group Art Unit: TBA

U.S. Application No.: 10/618,024

Examiner: TBA

Filed: July 11, 2003

Title: SEMI-INSULATING GAN AND METHOD OF MAKING THE SAME

**CERTIFICATE OF MAILING**

I hereby certify that this paper or fee is being deposited pursuant to 37 CFR 1.8

on the date indicated below and is addressed to the Commissioner of Patents, P.O. Box 1450, Alexandria, VA  
22313-1450

Lee Ann DiLello

10-16-2003

Date

**INFORMATION DISCLOSURE STATEMENT**

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

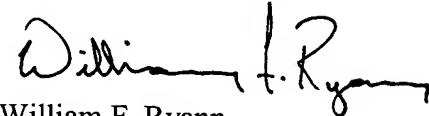
Sir:

Pursuant to 37 C.F.R. §1.56, the attention of the Patent and Trademark Office is hereby directed to the reference(s) listed on the attached PTO-1449. It is respectfully requested that the information be expressly considered during the prosecution of this application, and that the reference(s) be made of record therein and appear among the "References Cited" on any patent to issue therefrom.

1. This Information Disclosure Statement is being filed within three months of the U.S. filing date OR before the mailing date of a first Office Action on the merits. No certification or fee is required in accordance with 37 CFR § 1.56 and § 1.97(b).

Applicant does not believe that any additional fee is due in connection with the foregoing. However, any deficiencies may be charged to the deposit account 50-0860.

Respectfully submitted,



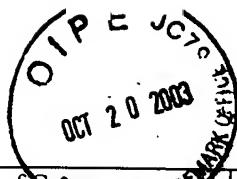
William F. Ryann  
Registration No. 44,313  
Attorney for Applicant

Date: 10-15-2003

Advanced Technology Materials, Inc.  
7 Commerce Drive  
Danbury, CT 06810  
Agent Ref: ATMI-661

FORM PTO-1449 INFORMATION DISCLOSURE STATEMENT (use several sheets if necessary)		US Dept. of Commerce Patent and Trademark Office		ATTORNEY DOCKET NO.		SERIAL NO.	
		ATMI-661		10/618,024			
		APPLICANT					
		Robert P. Vaudo, et al.					
		FILING DATE		GROUP			
		July 11, 2003		TBA			
U.S. PATENT DOCUMENTS							
EXAMINER INITIAL		PATENT NUMBER	ISSUE DATE	NAME	CLASS	SUBCLASS	FILING/PUBLICATION DATE IF APPROPRIATE
	BA	5,679,152	10/21/1997	Tischler, et al.			
	BB	6,156,581	12/5/2000	Vaudo, et al.			
	BC	6,440,823	8/27/2002	Robert P. Vaudo, et al.			
	BD	6,447,604	9/10/2002	Flynn, et al.			
	BE	6,488,767	12/3/2002	Xu, et al.			
	BF	6,533,874	3/18/2003	Vaudo, et al.			
	BG	20010008656		Tischler, et al.			7/19/2001
	BH	20010055660		Tischler, et al.			12/27/2001
	BI	20020028314		Tischler, et al.			3/7/2002
	BJ	20020068201		Vaudo, et al.			6/6/2002
	BK	6,596,079	7/22/2003	Vaudo, et al.			
FOREIGN PATENT DOCUMENTS							
		DOCUMENT NUMBER	PUBLICATION DATE	COUNTRY	CLASS	SUBCLAS S	TRANSLATION YES NO
							X (abstract only)
OTHER DOCUMENTS (Including Author, Title, Journal-Date, Page Number, Etc.)							
Continue on Page							
EXAMINER					DATE CONSIDERED		
EXAMINER: Initial if citation considered, whether or not citation is in conformance with MPEP § 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to the applicant.							





FORM PTO-1449 US Dept. of Commerce Patent and Trademark Office		ATTORNEY DOCKET NO. ATMI-661	SERIAL NO. 10/618,024
INFORMATION DISCLOSURE STATEMENT (use several sheets if necessary)		APPLICANT Robert P. Vaudo, et al.	
		FILING DATE July 11, 2003	GROUP TBA

U.S. PATENT DOCUMENTS							
EXAMINER INITIAL		PATENT NUMBER	ISSUE DATE	NAME	CLASS	SUBCLASS	FILING /PUBLICATION DATE IF APPROPRIATE
	AA	6,273,948 B1	8/14/2001	Porowski, et al.			
	AB	5,385,862	1/31/1995	Moustakas			
	AC	6,544,867 B1	4/8/2003	Webb, et al.			
	AD	5,686,738	11/7/1997	Moustakas			
	AE	6,261,931 B1	7/17/2001	Keller, et al.			
	AF	US 2002/0096692 A1					7/25/2002

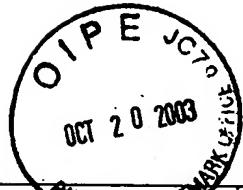
FOREIGN PATENT DOCUMENTS							
		DOCUMENT NUMBER	PUBLICATION DATE	COUNTRY	CLASS	SUBCLAS S	TRANSLATION YES NO
							X (abstract only)

OTHER DOCUMENTS (Including Author, Title, Journal-Date, Page Number, Etc.)	
AG	Jerzy M. Langer, et al. "Transition-metal impurities in semiconductor and heterojunction band lineups", Physical Review B, Vol. 38, No. 11, pgs. 7723-7739, 15 Oct. 1988.
AH	T. Graf, et al., "The Mn <sup>3+/2+</sup> acceptor level in group III nitrides", Applied Physics Letters, Vol. 81, No. 27, pgs. 5159-5161, 30 Dec. 2002.
AI	Sten Heikman, et al., "Growth of Fe doped semi-insulating GaN by metalorganic chemical vapor deposition", Applied Physics Letter, Vol. 81, No. 3, pgs. 439-441, 15 July 2002.
AJ	H. Akinaga, et al., "Growth and characterization of low-temperature grown GaN with high Fe doping", Applied Physics Letters, Vol. 77, No. 26, pgs. 4377-4379, 25 Dec. 2000.
AK	H. Ofuchi, et al., "Fluorescence x-ray absorption fine structure study on local structures around Fe atoms heavily doped in GaN by low-temperature molecular-beam epitaxy", Applied Physics Letters, Vol. 78, No. 17, pgs. 2470-2472, 23 April 2001.
AL	U. Wahl, et al., "Direct evidence for implanted Fe on substitutional Ga sites in GaN", Applied Physics Letters, Vol. 78, No. 21, pgs. 3217-3219, 21 May 2001.
AM	J. Baur, et al., "Photoluminescence of residual transition metal impurities in GaN", Appl. Phys. Lett., 67, (8), pgs. 1140-1142, 21 Aug. 1995.

Continue on Page 2

EXAMINER	DATE CONSIDERED
----------	-----------------

EXAMINER: Initial if citation considered, whether or not citation is in conformance with MPEP § 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to the applicant.



FORM PTO-1449  INFORMATION DISCLOSURE STATEMENT (use several sheets if necessary)	US Dept. of Commerce Patent and Trademark Office	ATTORNEY DOCKET NO. ATMI-661	SERIAL NO. 10/618,024
		APPLICANT Robert P. Vaudo, et al.	
		FILING DATE July 11, 2003	GROUP TBA

**OTHER DOCUMENTS (Including Author, Title, Journal-Date, Page Number, Etc.)**

AN	R. Heitz, et al., "Zeeman spectroscopy of the Fe <sup>3+</sup> center in GaN", Appl. Phys. Lett. 67 (19), pgs. 2822-2824, 6 Nov. 1995.
AO	J. Baur, et al., "Infrared luminescence of residual iron deep level acceptors in gallium nitride (GaN) epitaxial layers", Appl. Phys. Lett. 64 (7), pgs. 857-859, 14 Feb. 1994.
AP	R.Y. Korotkov, et al., "Optical properties of the deep Mn acceptor in GaN:Mn", Applied Phycis Letters, Vol. 80, No. 10, pgs. 1731-1733, 11 March 2002.
AQ	J.B. Webb, et al., "Semi-insulating C-doped GaN and high-mobility AlGaN/GaN heterostructures grown by ammonia molecular beam epitaxy", Applied Physics Letters, Vol. 75, No. 7, pgs. 953-955, 16 Aug. 1999.
AR	N.I. Kuznetsov, et al., "Insulating GaN:Zn layers grown by hydride vapor phase epitaxy on SiC substrates", Applied Physics Letters, Vol. 75, No. 20, pgs. 3138-3140.
AS	J. Baur, et al., "Determination of the GaN/AlN band offset via the (-/0) acceptor level of iron", Appl. Phys. Lett. 65 (17), pgs. 2211-2213, 24 Oct. 1994.
AT	R. Heitz, et al., "Excited states of Fe <sup>3+</sup> in GaN", Physical Review B, Vol. 55, No. 7, pgs. 4382-4387, 15 Feb. 1997.